

REMARKS

Upon careful and complete consideration of the Office Action dated January 25, 2008, applicant has amended the claims which, when considered in conjunction with the comments herein below, are deemed to place the present application into condition for allowance. Favorable reconsideration of this application, as amended, is respectfully solicited.

Applicant has amended the claims by incorporating the subject matter of original claim 15 into claim 1. As such, the subject invention is directed to a lead substitute material for radiation protection purposes in the energy range of an X-ray tube having a voltage of from 60 to 140 kV, comprising a structure of at least two protective layers of different compositions which are separate or joined together, wherein the protective layer(s) more remote from a body being protected comprise(s) predominantly the elements having a lower atomic number, or their compounds, and the protective layer(s) close to the body being protected comprise(s) predominantly the elements having a higher atomic number, or their compounds, wherein for nominal overall lead equivalents of from 0.25 to 2.0 mm the lead substitute material comprises from 12 to 22 wt. % matrix material, from 0 to 75 wt. % Sn or Sn compounds, from 0 to 73 wt. % W or W compounds, from 0 to 80 wt. % Bi or Bi compounds, and wherein not more than one of the constituents is 0 wt. %.

The Office Action rejected claims 15, 18, 19 and 20 under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Specifically, claims 15, 18 and 19 were rejected for the lack of antecedent basis to the limitation "the body". Claim 1 as amended (now incorporating the subject matter of original claim 15) now refers in the first instance to "a body being protected". Accordingly, the lack of antecedent basis has been rectified.

It is also noted that the Office Action has interpreted the reference to said "body" as any person in relation to the composition. It is respectfully submitted that it should be understood, and would be understood by a person skilled in the art, that the present invention relates to X-ray shielding material (for example, in the form of protective clothing such as an apron) that is arranged between the source of the radiation and the body of the

person to be protected (i.e. the wearer of said protective clothing). The Examiner's attention is directed to page 1, line 20 and page 15, lines 1-15, of the subject specification. Based on the subject disclosure, as well as the art cited by the Examiner, it is respectfully submitted that the skilled person reading the subject disclosure would have no ambiguity with regard to the arrangement of the protective layers that are referred to as being either remote or close to the body.

Claim 20 was rejected with regard to the term "weakly radioactive" as being indefinite. Applicant respectfully disagrees. The term "weakly radioactive" is a term of art that is widely used and merely refers to radioactive substances that have long half lives.

Based on the amendments made to the claims and the remarks given above, it is respectfully requested that the rejection of the claims based on 35 U.S.C. §112, second paragraph, be withdrawn.

Turning to the more substantive rejections made by the Office Action, and based on the incorporation of the subject matter of original claim 15 into claim 1, applicant will address the rejection of claim 15 made by the Office Action. The remaining rejections have become moot and should therefore be withdrawn. Claims 14-16 and 19 were rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over U.S. Patent No. 6,548,570 to Lange (hereinafter referred to as "Lange") in view of U.S. Patent No. 4,795,654 to Teleki (hereinafter referred to as "Teleki").

The Office Action noted that Lange did not teach the composition as comprising multiple layers of different compositions. However, the Office Action argued that Teleki teaches a radiation protective composition of multiple layers of differing compositions where one layer may comprise U and another Sn. Consequently, the Office Action alleged that at the time of the invention, a person of ordinary skill in the art would have found it obvious to use the multilayers of Teleki with the composition of Lange and would have been motivated to do so because Teleki teaches that another layer may protect from secondary radiation emitted by a first layer. Although the Office Action further noted that while Lange and Teleki do not teach the use of the layers relative to a body, at some point the layer with higher atomic weight material would be closer than the other layer to the body of either the wearer of the material, or a person near the wearer of the material.

Applicant respectfully disagrees with the above-noted combination and reading of the cited references, as well as the Office Action's interpretation of the body being protected as any person in relation to the composition.

To begin with, it is respectfully pointed out that the subject invention is directed to lead substitute materials. As is fully discussed on the first page of the subject specification, the purpose of the present invention is to find a material other than lead to be used as a radiation protection material. Teleki is not related to lead substitute materials. Although some combinations of Teleki might fall into the multiple layer compositions of the present invention, Teleki definitely teaches that lead may be included in the first layer. In fact, Teleki teaches the use of lead or tungsten in the first layer in a preferred embodiment and the sole use of lead in the first layer of the most favorable embodiment. Obviously, the skilled artisan looking to replace lead as a radiation protection material would not be consulting Teleki in the first place as it preferably teaches the use of lead in one of its layers.

Additionally, even if the skilled person were to look to Teleki for purposes of finding a lead substitute material, it is respectfully submitted that the laminated construction disclosed in Teleki is based on a completely different physical principle when compared to the present invention and would lead the skilled artisan to a construction very different from that of the present invention. More particularly, in accordance with the teachings of Teleki, the layer that is first hit by the X-ray radiation comprises elements with a particularly high atomic number (uranium to tantalum, i.e. atomic number = 92 to 73), while the second layer comprises elements having a lower atomic number (tin to niobium, i.e. atomic number = 50 to 41) and the third layer comprises elements having an even lower atomic number (zinc to titanium, i.e. atomic number = 30 to 22). This teaching of Teleki is in direct contrast to the present invention. Specifically, in accordance with the present invention, the layer that is first hit by the X-ray radiation, i.e. the protective layer more remote from the body (of the wearer of the respective clothing (see the discussion below)), comprises elements having a lower atomic number and the second protective layer, which is closer to the body of the wearer comprises the elements having a higher atomic number. This is the complete reverse of the construction of the layers as taught by Teleki. Accordingly, the skilled person reading Teleki

could not possibly derive the layer construction as claimed by the present invention as Teleki teaches away from the present invention.

As referenced above, it must be understood that the body being protected by the lead substitute material of the present invention would be the body that is using the protective layer from the X-ray radiation, i.e. the wearer of the protective clothing comprising the lead substitute material. The Office Action in rejecting claim 15 noted that “[w]hile the references Lange and Teleki do not instruct a use of the layers relative to a body, at some point the layer with higher atomic weight material for example U, will be closer than the other layer to the body of either the wearer of the material, or a person near the wearer of the material.” It is respectfully submitted that this is not a reasonable interpretation of the invention. The person near the wearer of the material, for example, the X-ray technician, would not rely on X-ray protection from the wearer of the material. If they desired protection, they would either wear the material themselves or rely on some other type of protection.

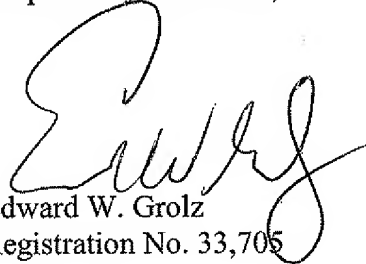
The skilled artisan would have realized from the present disclosure (as well as from the disclosure of Teleki) that the invention is directed to X-ray shielding material that is arranged between the source of the radiation and the object or body being protected. As discussed above with respect to the §112 rejections, it is clear that the X-ray shielding material (e.g. in the form of a protective apron) protects the wearer of the material (i.e. the protective clothing). It seems incomprehensible that the skilled artisan would interpret the material as being protective to a person near the wearer of the material. No ambiguity should exist.

In summary, the skilled artisan on the first hand would not even look to Teleki for purposes of the present invention as Teleki does not relate to lead substitute materials. It is clear that Teleki contemplates the use of lead as it is used in the preferred embodiments of Teleki. But even ignoring that fact, the skilled artisan combining the teachings of Teleki and Lange, and somehow coming to the conclusion that lead should not be used, the resulting construction of the material would be opposite to the construction of the lead substitute material of the present invention as discussed above. Accordingly, the subject invention as now claimed is both novel and unobvious over the prior art and the rejection of the claims based on Lange and Teleki are respectfully requested to be withdrawn.

The Office Action further rejected claims 1-4 and 14 on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-4 of U.S. Patent No. 7,041,995. This rejection is overcome by the terminal disclaimer filed herewith in compliance with 37 C.F.R. §1.321(c). The Office Action further provisionally rejected claims 1-21 of co-pending application no. 10/550,248. In order to overcome this rejection, applicant is filing a second terminal disclaimer herewith with regard to this co-pending application. Consequently, based on the submitted terminal disclaimers, it is respectfully requested that these rejections of the claims be withdrawn as well.

Based on the amendments and the remarks submitted above, it is respectfully submitted that all of the claims in the application contain patentable subject matter and a Notice of allowance is respectfully solicited.

Respectfully submitted,



Edward W. Grolz
Registration No. 33,705

Scully, Scott, Murphy & Presser
400 Garden City Plaza- Suite 300
Garden City, New York 11530
(516) 742-4343
EWG:eh